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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,096	11/03/2003	Jin Tak Kim	CU-3423 RJS	2817

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EXAMINER

PERVAN, MICHAEL

ART UNIT	PAPER NUMBER
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2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/700,096	KIM ET AL.	
	Examiner	Art Unit	
	Michael Pervan	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 2 is objected to because of the following informalities: line 5 "the controller" should instead be –the timing controller–. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (APA) in view of linuma (US 2001/0043203).

In regards to claim 1, the APA discloses (Figure 1) a device for adjusting control signals for an LCD, comprising: an LCD module (100) having an LCD panel (106) for displaying a picture, a timing controller (110) for adjusting a data supply and a driving signal (pg. 1, line 24-pg.2, line 3), a voltage generating unit (112) for generating a driving voltage (pg. 2, lines 3-5) and an input unit (116) provided with a plurality of control signal pins which are adjusted by an external adjustment signal (pg. 1, lines 15-21; the input unit receives signals from the outside (external) that control (adjust) the above units, namely LCD panel, timing controller, voltage generating unit and a control signal generating unit, therefore it has a plurality of control signals that are adjusted by an external adjustment signal); and a conversion board device (200) having a scaler unit (202) for generating and providing data (pg. 2, lines 9-11) and a power supply

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required for the LCD module and a power supply unit (204) (pg. 2, lines 11-13), said scaler unit digitizing inputs to the LCD module and scaling said inputs signals to the LCD module to match the LCD module (pg. 2, lines 9-11).

The APA does not disclose wherein the scaler is provided with microcomputer GPIO ports, and the microcomputer GPIO ports control the plurality of control signal pins provided in the input unit.

linuma discloses microcomputer GPIO ports (paragraph 56; Graphic controller is outside the display and has GPIO terminal).

It would have been obvious at the time of invention to modify the APA by incorporating the teachings of linuma, a graphic controller, provided with a GPIO terminal, is connected to an IO terminal of a flat panel controller, by adding the graphic controller of linuma to the scaler unit of the APA because GPIO devices provide a set of IO ports which can be configured for either input or output, support for common bus protocols like I²C, SPI and SMBus serial buses are cheaper than using a microcontroller.

In regards to claim 2, the APA and linuma disclose the plurality of control signal pins are for signals of FRC_EN, TDDI, LVDS_MAP_SEL, and the signals are properly adjusted under the control of the microcomputer GPIO ports to be transferred to the controller (pg. 1, lines 15-21; since the input unit receives signals from the GPIO terminal of the scaler unit to control the above units, namely LCD panel, timing controller, voltage generating unit and a control signal generating unit, and the control signal generating unit generates FRC_Enable, LVDS_MAP_SEL and TDDI signals,

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therefore the control FRC_Enable, LVDS_MAP_SEL and TDDI signals are properly adjusted by GPIO ports).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the APA in view of linuma and in further view of Yamazaki et al (US 6,778,159).

In regards to claim 3, the APA and linuma do not disclose the conversion board device generating a PWM signal for adjusting a common voltage.

Yamazaki discloses (Figure 4) the conversion board device (A/D Converter and Signal Processor) generating a PWM signal for adjusting a common voltage (col. 6, line 41-col. 7, line 35; A/D Converter (scaler), which is outside the panel, digitizes the data and then outputs to the Signal Processor, which is also outside the panel, then generates the signal with different pulse widths and voltages (PWM) and then outputs to the shift registers, which then output the voltage when the drivers are turned on).

It would have been obvious at the time of invention to modify the APA and linuma by incorporating Yamazaki, A/D Converter (scaler), which is outside the panel, digitizes the data and then outputs to the Signal Processor, which is also outside the panel, then generates the signal with different pulse widths and voltages (PWM) and then outputs to the shift registers, which then output the voltage when the drivers are turned on, because it improves high-gradation displaying operation (col. 7, lines 46-48).

Response to Arguments

5. Applicant's arguments filed November 7, 2006 have been fully considered but they are not persuasive.

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Applicant (on page 8 of argument) argued that neither the APA nor linuma show or suggest a scaler as is now recited in claim 1. Examiner respectfully disagrees.

As can be seen on page 2 of the specification under the Description of the Prior Art section, it cites "*A scaler unit 202 in the conversion board device 200 digitalizes and scales data and various kinds of input signals to match the LCD module*", which reads on said scaler unit as recited in claim 1.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art (Park US 6,816,139) is deemed relevant since it discusses control signals being external to the LCD panel.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Pervan whose telephone number is (571) 272-0910. The examiner can normally be reached on Monday - Friday between 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MVP
Jan. 8, 2007

AMR A. AWAD
SUPERVISORY PATENT EXAMINER
